

Total No. of Printed Pages:04

**SUBJECT CODE NO: H-159-B**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**T.E. (Mechanical)**  
**Tool Engineering**  
**(REVISED)**

[Time: Four Hours]

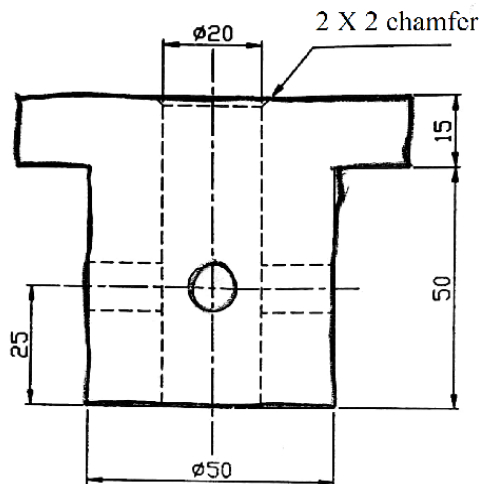
[Max.Marks: 80]

Please check whether you have got the right question paper.

- N.B
- 1) Q.4 & Q.8 are compulsory. Attempt any two questions from the remaining question of each section.
  - 2) Use drawing sheet for Q.4
  - 3) Assume suitable data and dimensions if required.
  - 4) All dimensions are in mm.

**Section A**

- Q.1 a) What is tool wear? Explain in detail the different types of tool wear 07
- b) In an orthogonal turning process the chip thickness is 0.58mm, feed rate is 0.25mm/rev and rake angle is  $15^{\circ}$ . Calculate cutting ratio chip reduction co-efficient, Shear angle and dynamic shear strain involved in deformation process 05
- Q.2 a) Explain the various elements of a single point cutting tool with help of neat sketch 07
- b) Differential between orthogonal and oblique cutting. 05
- Q.3 a) Explain the use of setting block and tennon in fixture 07
- b) Draw a neat sketch of simple bridge clamp 05
- Q.4 Design draw and dimension a drill jig to drill a holes of  $\phi 10$ mm, 4holes in a finish component shown in fig.no.(1) 16



16

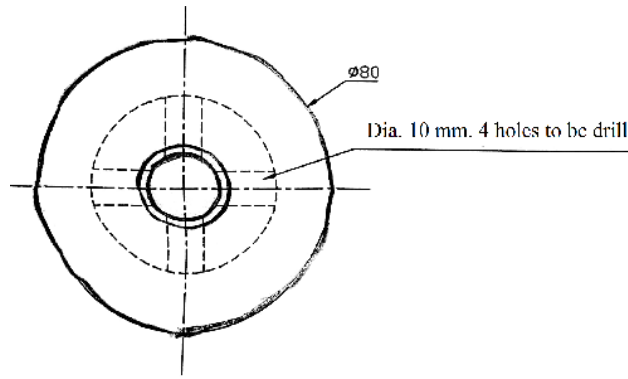


Fig.1

OR

Design and draw a milling fixture to mill the slot 10×10mm deep in a component shown in fig.no.(2)

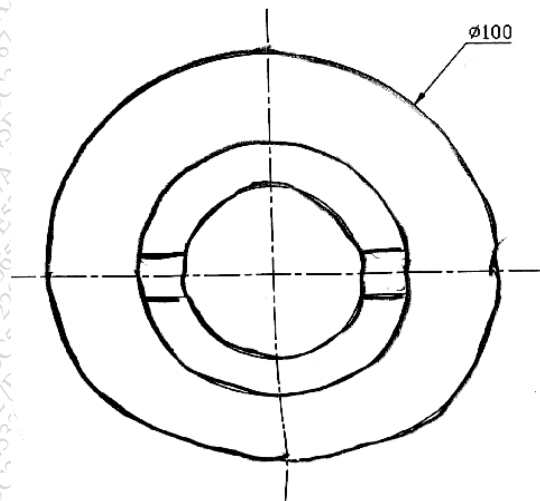
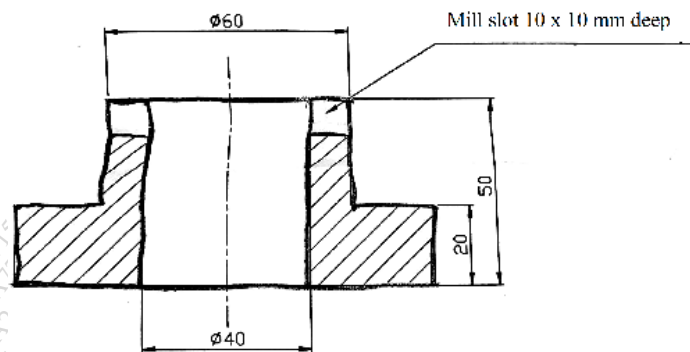


Fig.2

Section 'B'

- Q.5 a) Draw neat sketches of the following with nomenclature of their elements (Any Two) 12  
 i. Internal broach ii) Reamer iii) End mill cutter
- Q.6 a) What is mean by die clearance? Is the die clearance placed on the punch or die opening for a blanking and piercing operation? 07  
 b) Explain the two general classification of stripper used in progressive die 05
- Q.7 a) What causes spring back in bending? Explain the way of combating spring back. 07  
 b) Explain "Bending terminology" with suitable sketch. 05
- Q.8 a) Design either progressive or compound die to blank the workpiece shown in figure3 Thickness 16 of blank 2.4mm shear strength  $420\text{N/mm}^2$  strip Length 2000mm. Design should include  
 1) Punch size and die opening size  
 2) Strip Layout  
 3) Center of pressure

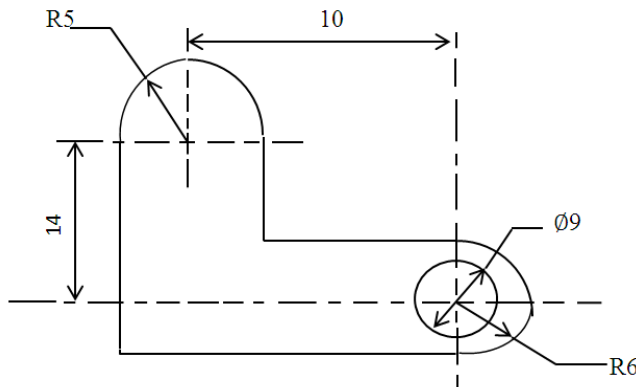


fig.3

OR

- b) A shell shown in figure 4 has a height of 48mm and a diameter of 48mm. The corner radius is 2mm and workpiece material is medium carbon steel (yield strength  $335\text{N/mm}^2$ ) and is 1mm thick. Design die for drawing operation.

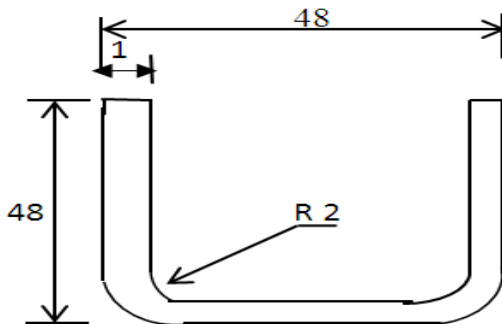


Fig.4